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(56) Prior Art Documents
EP 182756
AU 14659/88
US 4303676
(57) Claim
1. A composition for topical application to mammalian skin
which comprises:

(i) from 0.01 to 99% by weight of hyaluronic acid
fragments comprising from 7 to 50 monosaccharide units
terminating either with a glucuronic acid unit and/or an N-
acetyl glucosamine unit, or an unsaturated derivative of one
or both of these terminal units; and
(ii) from 1 to 99.99% by weight of a cosmetically
acceptable vehicle;
(iii) means for enhancing the activity of said
fragments, in terms of angiogenic response, following
topical application of the composition to the skin, said
means being a penetration enhancer chosen from:

2-methyl propan-2-ol

Propan-2-ol

Ethyl-2-hydroxypropanoate

Hexan-2,5-diol

POE(2) ethyl ether

Di(2-hydroxypropyl) ether

Pentan-2,4-diol

Acetone

POE(2) methyl ether

2-hydroxypropionic acid

2-hydroxyoctanoic acid

Propan-1-ol

1,4 Dioxane

Tetrahydrofuran

Propylene glycol dipelargonate

Polyoxypropylene 15 stearyl ether

Octyl alcohol

POE ester of oleyl alcohol

Oleyl alcohol

Lauryl alcohol

Dioctyl adipate

Dicapryl adipate

Diisopropyl adipate

Diisopropyl sebacate

Dibutyl sebacate

Diethyl sebacate

Dimethyl sebacate

Dioctyl sebacate

Dibutyl suberate

Dioctyl azelate

Dibenzyl sebacate

Dibutyl phthalate

Dibutyl azelate
Ethyl myristate
Dimethyl azelate
Butyl myristate
Dibutyl succinate
Didecyl phthalate
Decyl oleate
Ethyl caproate
Ethyl salicylate
Isopropyl palmitate
Ethyl laurate
2-ethyl-hexyl pelargonate
Isopropyl isostearate
Butyl laurate
Benzyl benzoate
Butyl benzoate
Hexyl laurate
Ethyl caprate
Ethyl caprylate
Butyl stearate
Benzyl salicylate
2-hydroxypropanoic acid
2-hydroxyoctanoic acid
1-dodecylaza cycloheptan-2-one
dibutyl sebacate, and
esters of pyroglutamic acid having the structure (10)
as herein defined; and/or
a cationic polymer; and/or
a hair growth stimulant chosen from:

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- (1) α -1,4 esterified disaccharides having the structure (2) as hereinbefore defined;
- (ii) esterified oligosaccharides including at least one esterified disaccharide unit consisting of a uronic acid residue having the structure (3) as hereinbefore defined and a hexosamine residue having the structure (4) as hereinbefore defined;
- (iii) minoxidil and derivatives thereof;
- (iv) direct proteoglycanase inhibitors;
- (v) glycosaminoglycanase inhibitors;
- (vi) glycosaminoglycan chain cellular uptake inhibitors;
- (vii) glycosidase inhibitors; and
- (viii) chemical activators of protein kinase C enzymes.